Alaska Department of Fish and Game
Division of Wildlife Conservation
September 2002

Predation on Moose and Caribou by a Regulated Wolf Population

Mark E. McNay

Research Final Performance Report
1 July 2001–30 June 2002
Federal Aid in Wildlife Restoration
Grant W-27-5, Project 14.19

This is a progress report on continuing research. Information may be refined at a later date.

FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Predation on moose and caribou by a regulated wolf population

PRINCIPAL INVESTIGATOR: Mark E McNay

COOPERATORS: None

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR.: W-27-5

PROJECT NR.: 14.19

WORK LOCATION: Unit 20A

STATE: Alaska

PERIOD: 1 July 2001–30 June 2002

I. PROGRESS ON PROJECT OBJECTIVES

OBJECTIVE 1: Estimate wolf predation rates on moose and caribou using a periodic sampling design.

In 1998 we designed a survey method to estimate predation rates without seasonal sampling bias. We began by building a computer simulation to see if, through periodic sampling, we could achieve adequate precision. The simulations indicated that a design using 11 four-day periods would provide an estimate of the kill rate for all pack sizes with a 90% confidence limit less than ±25% of the mean kill rate.

We applied our simulation as a field test during winter 1998–1999 and successfully monitored 12 wolf packs varying in size from 1 to 15 wolves during 10 four-day periods. We detected 24 kills made by 6 of the monitored packs on sample days. During winter 2000–2001 we successfully monitored 8 wolf packs for 11 four-day periods and detected 46 kills that were made on sample days.

OBJECTIVE 2: Examine the effects of various covariates on kill rate including pack size, pack composition, prey distribution, prey abundance, prey species, prey sex, prey age, snow depth, temperature and season.

Distribution of Dall sheep, moose, and caribou were determined from aerial surveys as part of the department's survey–inventory activities during winter. Stratification and population estimations for moose were conducted in autumn 2000 within the study area. Seventy-seven

caribou wore radio collars in the Delta Herd in autumn 2000. The distribution of those caribou within the study area was monitored during the kill rate survey flights. The Dall sheep population is estimated annually within the study area.

Weather records are available from National Weather Service Fairbanks. Snow depths were monitored using a snow stake station located in the center of the study area.

OBJECTIVE 3: Integrate existing data on characteristics of exploited wolf populations with predation rate data to develop predictions for efficacy of ground-based hunting and trapping in regulating wolf populations and wolf predation on moose and caribou.

During 1995–2000 we captured 184 wolves and radiocollared 143 of those to monitor the population dynamics of a highly exploited wolf population. The effects of exploitation on wolf population characteristics determined in Project 14.17 will be considered during analysis of this current study.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB 8: Complete data analysis and write reports integrating information on the effects of harvest on wolves with information on predation rates on moose and caribou by wolves.

Data analysis regarding the effects of harvest on the Unit 20A wolf population was completed and summarized in the Final Research Report for Federal Aid Project 14.17. In addition the following data on wolf predation of moose, caribou and Dall sheep in Unit 20A was compiled during this reporting period. In winters 1998–1999 and 2000–2001, aerial surveys were completed in 22 four-day sampling periods. During the 2 winters we identified 138 kills made by 20 wolf packs that included 119 moose, 12 caribou, and 7 Dall sheep. Fifty-eight moose, 6 caribou and 5 sheep were killed on sample days and those kills were used to calculate kill rates by wolves. Among 55 moose killed on sample days for which age of the moose was determined, 33% were calves, 29% were yearlings and 38% were moose older than 2 years of age. The mean kill rate for moose was 29.1 moose/pack/winter (90% CI, 23.2–35.1). Wolf pack sizes ranged from 2 to 15 and averaged 5.8 wolves per pack. Per capita wolf consumption of all identified prey was 7.0 kg of prey/wolf/day (90% CI = 5.5–8.4 kg/wolf/day) between 29 October and 4 April.

JOB 9: The principal investigator will present the results of this study at agency workshops, agency meetings or scientific conferences related to the management of northern wolf-prey systems.

Preliminary results of this study were compiled and presented at the Department of Fish and Game's Region III annual meeting in Fairbanks in December 2001.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

No additional federal aid work was completed.

IV. PUBLICATIONS

None.

V. RECOMMENDATIONS FOR THIS PROJECT

None.

VI. APPENDIX

None.

VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE $10,927.00 + STATE SHARE $3642.50 = TOTAL $14,569.50

VIII. PREPARED BY:

Mark E McNay
Wildlife Biologist III

SUBMITTED BY:

Pat Valkenburg
Research Coordinator

Laura A McCarthy
Publications Technician II

APPROVED BY:

_____
Thomas W. Paul
Federal Aid Coordinator
Division of Wildlife Conservation

_____
Wayne L Regelin, Director
Division of Wildlife Conservation

APPROVAL DATE: _____